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(19) (CA) **APPLICATION FOR CANADIAN PATENT** (12)

(54) Device to Be Connected to a Bottom and/or a Wall of a
Sanitary Apparatus for Supplying Air and/or Water into
the Water-Filled Sanitary Apparatus

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(30) (DE) P 40 10 976.3 1990/04/05

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ABSTRACT

The present invention pertains to a device to be connected to a bottom and/or a wall of a sanitary apparatus, especially a bathtub, for feeding air and/or water into the sanitary apparatus filled with water.

The present invention pertains to a device to be connected to a bottom and/or a wall of a sanitary apparatus, especially a bathtub, for supplying air and/or water into the water-filled sanitary apparatus.

The term "sanitary apparatus" according to the present invention comprises sanitary apparatus which hold water, such as bathtubs, swimming pools, shower trays, etc. Insofar as a bathtub will be spoken about below in connection with a sanitary apparatus, this will be done only as an example.

Bathtubs which are designed as so-called "whirlpools" have been known for a long time. Here, air and/or water are fed into the filled bathtub, individually or as a mixture under pressure, via one or several pumps. The feed is usually performed via small nozzles, so that the air and/or the water are injected in the form of fine jets. Such whirlpools are used mainly for massage, but for other medical

applications as well.

To achieve this, prior-art whirlpools have a plurality of small openings in the bottom or in the wall. These may be either simple holes or nozzles which are fastened in the holes and some of them permit the direction of the flow to be directed.

The installation system represents a great problem in this connection. Since the openings/nozzles extend at varying distances from one another, each of them is connected to a separate water/air feed line according to the state of the art. The cost of installation is very high, corresponding to the number of nozzles (e.g., 50 to 100). Another disadvantage is the fact that the installation is carried out outside the sanitary apparatus, and existing assembly units can be retrofitted with difficulty, if at all.

Prior-art whirlpools also have a drain device, e.g., over a stationarily mounted drain pipe. Based on the small cross section of the drain pipe, the velocity of flow is relatively high, which has led to accidents in the past, because, e.g., the hair of children was caught in the drain pipe. A fatality even became known recently.

The basic task of the present invention is to offer a possibility for simplifying the design of sanitary apparatuses, into which air and/or water is injected under pressure to form a "whirlpool", and which may have, if desired, a drain device for excess water. Subsequent retrofitting of existing sanitary apparatuses is also desirable.

The present invention is based on the discovery that the various problems known from the state of the art can be solved in a surprisingly simple manner by feeding in the air and/or water to be introduced via a channel-like strip, which is centrally connected to an air and/or water feed pipe and, if desired, to a central water drain, and is arranged either within (on the surface of) the sanitary apparatus or in its bottom/wall, instead of individual openings/nozzles.

The nozzle-like feed of air/water is ensured via a correspondingly perforated cover of the strip. If the channel-like strip has an appropriate cross section, uniform pressure can be provided over the entire surface of the perforated cover strip.

The cost of installation is reduced to a minimum. Using a single feed pipe, any desired

number of nozzles are supplied with air and/or water via the channel-like strip. The bathtub may be connected to the strip via a simple sleeve. Both a air and water can be fed into the strip via the sleeve with a simple feed pipe from a pump, providing that a pump of the type described in West German Patent Specification No. DE-PS 35,37,039 is used.

Due to the connection of the strip to a wastewater pipe, excess water is drained, again using a pump for drainage. Since the drain pipe is located under the cover, which has only small openings, there is no longer a risk that , e.g., the hair of a person sitting in the whirlpool will be drawn in by the drain pipe.

A corresponding oblique position of the strip or inclined design of the bottom of the strip ensures that no water is left in the strip after the water has been drained off from the bathtub. This markedly improves hygiene.

In the general embodiment, the present invention pertains to a device to be connected to a bottom and/or wall of a sanitary apparatus, especially a bathtub, for feeding air and/or water

into the water-filled sanitary apparatus, comprising
a channel-like strip with a bottom and with
side walls projecting from it essentially
vertically upward, as well as with an upper
cover provided with openings,

wherein the strip can be connected at least at one
point to an air and/or water feeding means and, if
desired, to a water drain pipe.

If the strip is subsequently arranged in an
existing bathtub, the cover may be designed such
that it extends over the side walls of the strip and
ends in the inner surface of the tub. Consequently,
the cover has a vaulted shape. At the same time,
the risk of injury is ruled out due to the absence
of edges.

Since the strip needs only to have only a small
overall height (e.g., 2 cm), it causes no
disturbance even when it is subsequently arranged on
the bottom or in the wall of the tub. The strip may
also have any desired length and width. Its top
view may be rectangular, but also circular, or the
like. The strip may also be designed as a ring.

The diameter of the openings of the cover
should not exceed 2mm. This nearly completely rules

out the possibility of foreign objects being sucked off through the cover.

5 The openings may also be designed as nozzles, which are fastened in the cover in such a way that their directions are adjustable. According to one embodiment, the nozzles are made from balls which have a central hole and are rotatably mounted in a corresponding receiving holder fastened in the cover. It is thus possible to adjust from the
10 outside the direction in which the air and/or water jets are discharged.

 The cover should be removable in order to permit cleaning of the strip. This is also an essential advantage of the device according to the
15 present invention, because wet zones, in which dirt particles and pathogens may accumulate, are avoided.

 The cover can be placed on the walls of the strip by means of, e.g., clips.

20 To separate the air/water feed pipe from the water drain, the strip is subdivided into different zones, which are separated from one another, in a variant of the device according to the present invention. In the simplest case, this is achieved by arranging vertical partitions in the longitudinal

direction of the rail. However, it is also possible to surround the zone for air/water feed with a kind of annular channel for draining, as will be explained in greater detail in the following description of the figures.

In any case, at least one zone is connected to the air and/or water feed pipe and at least one zone to the water drain pipe.

To prevent the water being introduced from returning, a check valve may be arranged in the feed pipe or in the zone in which the feed pipe is connected to the strip.

The shape of the cross section of the strip is freely selectable. While a rectangular shape with small height and convex cover relative to the inner surface of the bathtub is advantageous for retrofitting, the strip may also have a semicircular shape and may be fastened from the outside in the area of a corresponding groove in the bottom or the wall of the bathtub for adjustment to newly manufactured bathtubs. However, it was also suggested that the device according to the present invention be molded in one piece with the bathtub. This will be explained in greater detail below.

5 The present invention also pertains to a
sanitary apparatus equipped with the above-mentioned
device, which (apparatus) has at least one opening
for connecting an air and/or water feed pipe and, if
desired, at least one opening for connecting a water
drain pipe.

10 To eliminate connection points between the tub
and the device, which may permit dirt particles or
bacteria to accumulate, the device shall be an
integral part of the tub according to a particularly
advantageous embodiment of the present invention.
This can be achieved, e.g., by forming the strip
from the bottom or the wall of the tub. In this
case, only the corresponding connections and a cover
15 are to be provided.

Further characteristics of the present
invention will become apparent from the
characteristics of the subclaims, as well as the
other application documents.

20 The present invention will be explained in
greater detail below on the basis of various
embodiments. In a highly schematic representation,

Figure 1 shows a vertical cross section through a bathtub with a retrofitted device according to the invention,

Figure 2 shows a vertical longitudinal section through the bathtub according to Figure 1,

Figure 3 shows a top view of the bathtub according to Figure 1,

Figure 4 shows a vertical cross section through another embodiment of a bathtub with a device according to the present invention,

Figure 5 shows a vertical cross section through another embodiment of a bathtub with a device according to the present invention,

Figure 6 shows a vertical cross section through another embodiment of a bathtub with a device according to the present invention, and

Figure 7 shows a vertical cross section through another embodiment of a bathtub with a device according to the present invention.

Identical components or components with identical function are designated by identical reference numerals in the figures.

The bathtub 10 shown in Figures 1 and 2 has in its bottom 12 an opening 14, from which a drain pipe 16 and a feed pipe 18, arranged concentrically on it, extend to the outside, and said feed pipe 18 extends through said drain pipe 16 in the elbow area at 20.

Said feed pipe 18 is connected to a pump (not shown), via which an air/water mixture is fed into said tub 10 under pressure.

For this purpose, a strip 22 with U-shaped cross section is fastened on said bottom 12 of said tub 10, and is sealingly connected to said feed pipe 18. Said strip is delimited at the top by a cover 24, which is convex in relation to said bottom 12, projects over the side walls 26 of said strip 22, and ends in the inner surface of said bottom 12. As is apparent from Figure 2, said cover 24 rises above said strip 22 at the front and rear ends as well, so that a base area, whose top view is oval (Figure 3), is covered. Said drain pipe 16 extends beneath the projecting part of said cover 24.

The air/water mixture is fed into the space between said strip 22 and said cover 24 via said feed pipe 18 and is injected into the water present

in said tub 10 via the openings 28 present in said cover 24.

5 The section of said cover 24 extending above said strip 22 also has openings (perforations), via which the water reaches the section 32 located under it, from which it is removed via said drain pipe 16.

10 Due to the device according to the present invention, practically the entire bottom area of said tub 10 may be designed as a "nozzle surface" with a single feed pipe (said feed pipe 18), as is shown in Figure 3. The device can also be retrofitted without any problem, and the existing drain of the tub can even be used to connect said pipes. The device can be easily cleaned by simply removing said cover 24 that is detachably fastened on said strip 22. In addition, due to its inclined arrangement toward said drain pipe 16, residual water flows off automatically when the water 30 is drained off.

20 While the embodiment shown in Figures 1 through 3 lends itself mainly to retrofitting existing tubs, Figures 4 through 7 show alternative embodiments, which can be advantageously realized especially in new tubs.

In the tub according to Figure 4, holes 32, 34 are present in said bottom 12, and said hole 32 is used to connect an air/water feed pipe 18, and hole 34 is used to connect a drain pipe 16.

5 Said pipe 18 opens into the area of said tub 10, which is covered by a first cover 24, which extends -- as in Figure 1 -- in the longitudinal direction of the tub and is provided with a plurality of openings (here: 80 openings, distributed over the length and width of the cover).

10 The other cover 24 extends in parallel thereto and covers the area of said drain pipe 16. Both covers are detachably placed on clips on the bottom of the tub.

15 Consequently, while the air/water mixture is fed in via said pipe 18 and said hole 22, excess water is removed through said left cover 24 in Figure 4 via said hole 34 and said drain pipe 16.

20 In the embodiment according to Figure 4, the bottom 22a and said side walls 26 of said strip 22 are formed by said bottom 12 of said tub 10 and the vaulted sections of said cover 24 itself.

 In the embodiment according to Figure 5, said bottom 12 of said tub 10 is designed with a bead-

shaped, channel-like depression, which extends in the longitudinal direction of the tub and is delimited at the top by a cover 24, which is flush with the inner surface of said bottom 12.

5 The space 38 thus created is subdivided by additional partitions 40 into three sections, and the middle section 40a is used to feed in the air/water mixture, and the side zones 40b are used to return water, in the above-described manner.

10 As was described above, the individual zones are, of course, again connected to a feed pipe and a drain pipe, respectively. One advantage of the embodiment according to Figure 5 is that there are no parts projecting into the tub any longer. Said
15 cover 24 is placed detachably on said partitions 40 in this case as well, so that it can be easily removed. This offers the possibility of cleaning and higher hygienic standards. This embodiment can
20 be realized in existing tubs by cutting open the bottom and inserting a strip from beneath, according to Figure 5.

 The embodiment according to Figure 6 is similar to that shown in Figure 5, but here the individual zones are arranged as described below, rather than

next to one another: Zone 40a for feeding in the air/water mixture is separated by partitions 40 from a U-shaped channel 40b, which is used to return water. In contrast to the embodiment according to Figure 5, the return channel is here placed around rather than next to the feed zone. This leads to an increase in the overall height of said depression 36, but at the same time the width is reduced.

The embodiment according to Figure 7 corresponds, with one exception, to that shown in Figure 6. Said cover 24 is not flush with the inner surface of said bottom 12 here, but, similarly to Figure 1, is vaulted and rises above said depression 36 on both sides. It is, of course, detachable.

The sanitary connections have the same design in all cases, as described on the basis of the embodiment according to Figures 1 through 3.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A device to be connected to a bottom and/or a wall of a sanitary apparatus, especially a bathtub, for feeding air and/or water into the sanitary apparatus filled with water, comprising:

a channel-like strip with a bottom and side walls extending essentially vertically upward from it, and a cover provided with openings,

in which the strip can be connected at least at one point to an air and/or water feed pipe and, if desired, at least at one point to a water drain pipe.

2. A device in accordance with claim 1, in which the cover extends above the side walls of the strip.

3. A device in accordance with claim 1 or 2, in which the openings in the cover have a maximum diameter of 2 mm.

4. A device in accordance with claim 1, in which the openings are formed by nozzles which are fastened in the cover in such a way that their directions are adjustable.

5. A device in accordance with claim 4, in which the nozzles consist of balls which have a central hole and are rotatably mounted in a corresponding receiving holder fastened in the cover.

6. A device in accordance with claim 1, in which the cover is designed as a detachable cover.

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7. A device in accordance with claim 6, in which the cover can be placed on the wall of the strip by means of clips.
8. A device in accordance with claim 1, in which the bottom is inclined.
9. A device in accordance with claim 1, in which the space enclosed by the bottom, the walls, and the cover is subdivided by partitions into a plurality of parallel zones in the longitudinal direction of the strip, in which at least one zone can be connected to the air and/or water feed pipe and at least one zone can be connected to the water drain pipe.
10. A device in accordance with claim 1, in which a check valve is arranged in the connection zone to the air and/or water feed pipe.
11. A device in accordance with claim 1, with a semicircular cross section.
12. A device in accordance with claim 1, with rectangular cross section.
13. A device in accordance with claim 1 as an integral part of a sanitary apparatus.
14. Sanitary apparatus, especially a bathtub, with a device arranged in the area of the bottom and/or the wall in accordance with claim 1, as well as with at least one opening for connecting

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the air and/or water feed pipe and/or at least one opening for connecting the water drain pipe.

15. Sanitary apparatus in accordance with claim 14, in which the device is fastened on the bottom and/or the wall.

16. Sanitary apparatus in accordance with claim 14 with at least one groove hollowed out in the bottom and/or the wall, in which the device is fitted.

17. Sanitary apparatus in accordance with claim 16, in which the cover of the device is flush with the inner surface of the bottom and/or the wall.

18. Sanitary apparatus in accordance with claim 16 or 17, in which the walls and the bottom of the device is directly molded in one piece with the bottom and/or the wall of the sanitary apparatus.

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FIG. 1

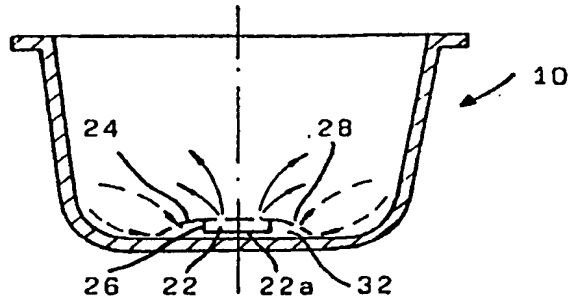


FIG. 2

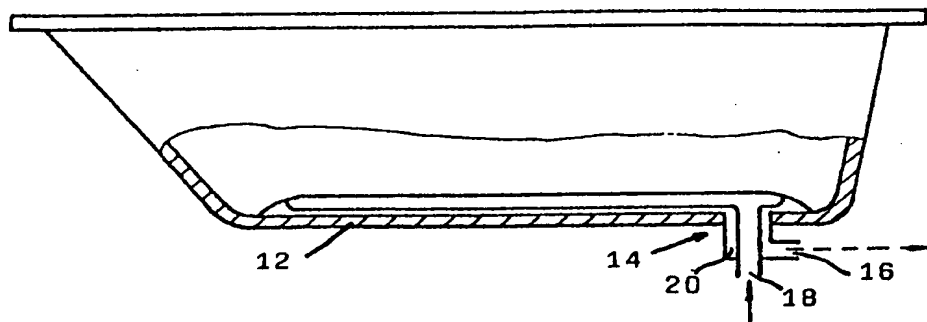
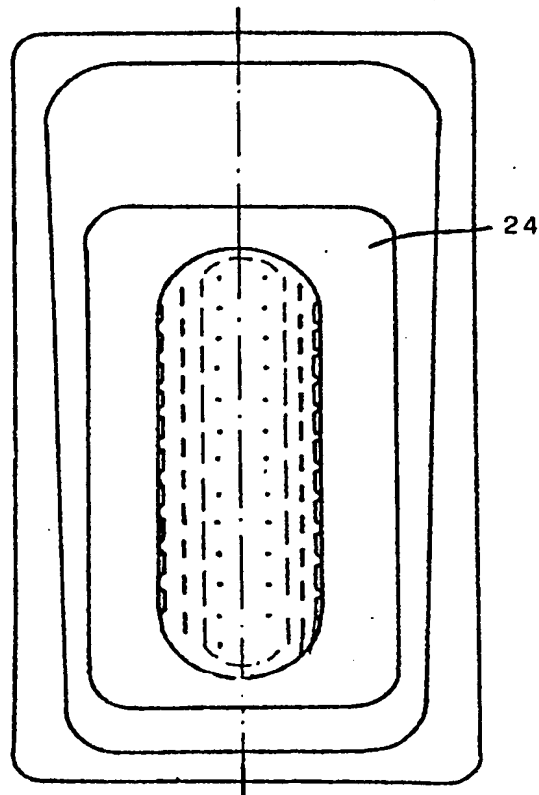


FIG. 3



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FIG. 4

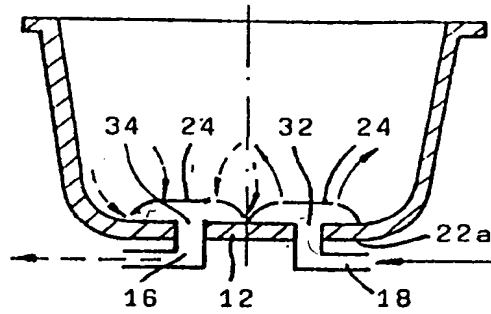


FIG. 5

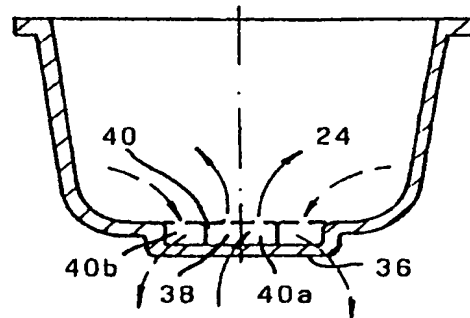


FIG. 6

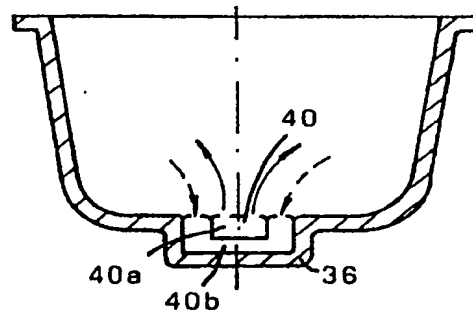
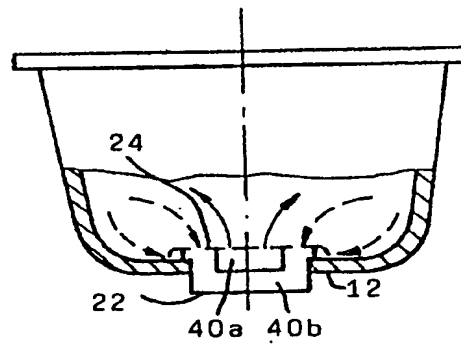


FIG. 7



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